

Greens or "Potherbs"—Chard, Collards, Kale, Mustard, Spinach, New Zealand Spinach

by Albert A. Banadyga

Greens include chard, collards, kale, mustard, spinach, and New Zealand spinach. Grown for their tender and succulent leaves and stems, greens are often referred to as "potherbs" since they are usually cooked before eating.

Quite easy to grow, greens require a relatively short growing season. Greens are good sources of some of the vitamins and minerals. They are tasty when cooked fresh from the garden. Raw greens are often added to tossed salads to give them additional color and a different and zesty flavor.

Greens are cool season crops, with the exception of New Zealand spinach. Thus home gardeners normally plant and grow them during cooler periods of the year—spring and fall.

Rapid and continuous growth is essential for both high quality and high yields. To obtain this growth, you need to provide a fairly rich soil containing adequate amounts of organic matter, a good supply of plant nutrients, and a continuous supply of soil moisture.

CHARD (*Beta vulgaris* var. *cicla*)—often called Swiss chard, is a type of beet developed for its large crisp leaves and fleshy leafstalks rather than its roots. It is of quite ancient origin, first reported in the Mediterranean region and the Canary Islands.

Chard is a popular garden vegetable, particularly in the North. It will withstand warm summer temperatures, so that a planting in the early spring can be continuously harvested throughout the summer and fall.

One serving of cooked chard has

13 calories and provides 87% of the Vitamin A and 25% of the Vitamin C required daily by the average adult.

Chard thrives best in a well-drained mellow or friable (crumbly) soil, such as a sandy or clay loam. However, it will grow well in most soils if provided with nutrients and moisture. Soil pH may range from 6.0 to 6.8. Chard is a cool season crop, will withstand light frosts, and does best if planted in the early spring about 2 to 4 weeks before the last frost.

The optimum monthly average temperature for plant growth is 60° to 65° F with a monthly minimum average of 40° and a monthly maximum average of 75°. Soil temperatures for seed germination may range from 50° to 85° with a minimum of 40°, an optimum of 85° and a maximum of 95°.

Adequate soil moisture is especially important for seed germination and early plant growth. Irrigation is particularly beneficial during dry conditions.

Popular varieties include Lucullus, Fordhook Giant, Large White Rib, and Rhubarb (red stemmed). Chard has a multiple seed, as does the beet. Thus one to six plants may emerge from each seed. There are about 1,200 seeds per ounce.

Fertilizing

Before planting, broadcast about 3 pints of a complete fertilizer, such as 10-10-10, to each 50 feet of row. Mix the fertilizer thoroughly with the upper 6 to 8 inches of soil. The seed bed should be thoroughly prepared, free of clods and trash, and slightly firmed.

Distance between rows may be 18 inches. Make a slight furrow in the row, about ½ inch deep, and plant

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the seeds in the furrow 1 to 2 inches apart. Cover the seed with $\frac{1}{2}$ inch of soil and firm lightly with the back of a rake. Seedlings should emerge in 8 to 10 days.

As the plants grow, periodically thin them out until they are about 12 inches apart. Plants pulled out in the thinning process may be used as greens.

For a very early crop, plants may be started in a greenhouse or cold-frame and transplanted to the garden after danger of heavy frosts is over. Plant the seeds in cups, or other small containers, about 3 to 4 weeks before they are to be planted in the open garden. Be sure to "harden-off" the tender plants by gradually withholding water and exposing them to outside weather conditions. Hardening-off should begin about a week before the plants are set out in the open.

Control weeds by hoeing before the weeds get a good start. Or better still, mulch the young plants with such materials as straw, grass clippings, newspapers, or black plastic film.

Be on the lookout for such insects as cabbage worms, aphids, beet leaf miner, and flea beetle. Worms may

Left, Fordhook Giant Swiss chard. Right, Swiss chard, properly spaced and with outer leaves ready for harvest. These overage about a foot high, and should not be left to become coarse and overgrown.

be removed by hand picking, aphids may be washed off with a fine spray of water from a garden hose, or recommended insecticides may be used. Crop rotation and sanitation will help reduce damage from leaf spots and other diseases.

For rapid and continuous growth, sidedress the crop about a month after planting. Repeat at 4- to 6-week intervals. At each sidedressing uniformly distribute one pint of a complete fertilizer (or one cup of sodium nitrate) per 50 feet of row. Place the fertilizer in a band 4 to 6 inches out to the side of the plants, making certain not to get any on the plants themselves.

Leaves and stems are ready for harvest about 50 to 60 days after planting. With a sharp knife cut off a few of the outer leaves, about an inch above ground, while they are still tender and succulent. Cut carefully to



avoid injury to younger leaves and the central bud. Continue harvesting throughout the summer and fall. As you remove the outer stems and leaves, new ones will continue to form and grow from the central bud.

Harvesting should be continued, regardless of whether or not the greens will be used, or else new leaves will not be available later in the season.

A good yield, for the full season, is about one pound of chard greens per foot of row. A 30-foot row will supply an average family of 4 with an adequate supply of fresh chard greens throughout the season.

Some gardeners dig up the plants just before the first heavy freeze in fall, and store the entire plant in a protected cellar or coldframe for continued harvest into the winter. Plants are stacked upright, with roots in contact with the soil, and watered lightly to prevent excessive wilting and to encourage a very limited amount of continued growth.

COLLARDS (*Brassica oleraceae* var. *acephala*)—originated in the British Isles and Western Europe. The collard is often called a non-heading cabbage, since it does not form a true head but rather a large rosette of leaves. It belongs to the cabbage family and its culture and use are quite similar to those of cabbage. It may be grown throughout the year in the South, and as both a spring and fall crop in the North.

One serving of cooked collards has 21 calories and provides 87% of the Vitamin A, 74% of the Vitamin C, and 14% of the calcium in the minimum daily requirements of an average adult.

Collards may be grown on a very wide range of soils, but sandy, silt, or clay loams are preferred. Soil pH may range between 5.5 to 6.8, with 6.0 being ideal. The plant is a heavy feeder, often growing to a height of 3 to 4 feet.

Optimum monthly average temperatures for plant growth are 60° to 65° F with a monthly minimum average of 40° and a monthly maximum average of 75°. Soil temperature for seed germination may range from 45° to 95° with a minimum of 40°, an optimum of 85° and a maximum of 100°. Collards will withstand a greater range of temperature, both heat and cold, than most other vegetables grown in the South. If the temperature drops gradually over a period of several days, collards can withstand temperatures as low as 15°.

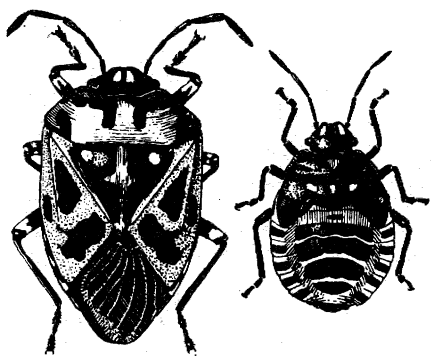
Collard seed will germinate in 4 to 9 days even under low soil moisture conditions. The plants grow best in well-drained soils that are provided with adequate moisture by rainfall or irrigation.

Popular Varieties

Vates, Morris Heading, Georgia, Cabbage-Collard, and Green Glaze are popular varieties. One-fourth ounce of seed is sufficient to plant 100 feet of row. There are about 8,000 seeds per ounce.

Collards are hardy and may be planted in the spring about 4 to 6 weeks before the last spring frost and again in the fall about 6 to 8 weeks before the first fall frost. Prepare the soil as suggested for chard. Broadcast 4 pints of fertilizer, such as 10-10-10, per 50 feet of row and mix it thoroughly with the soil before planting. Rows are normally 3 to 4 feet apart.

Collards may be seeded directly in the garden or transplanted. When seeding directly in the garden, plant the seed ¼-inch deep and about 1 inch apart in the row. Seedlings will emerge in about 5 days. Plants may be left at the seeded spacing, or thinned to 6, 12, or 18 inches apart depending on how they will be harvested. The plants pulled out in thinning may serve as transplants or trimmed and used as greens.



Harlequin bug. Adult, left. Nymph, right.

Transplants may be grown in protected beds in the spring and in open plant beds in the summer. Seeds are planted in individual containers, flats, or rows in ground beds about 4 to 6 weeks before time to transplant into the garden. When plants are 6 to 8 inches tall, set them in the garden row 12 to 18 inches apart, and water well.

About a month after planting in the garden, sidedress collards as suggested for chard.

Control weeds by hoeing or mulching. Insects that may cause problems include cabbage worms, aphids, harlequin bugs, and root maggots. Two diseases that may cause damage are downy mildew and black leg. General control measures are the same as suggested previously for chard.

Collards may be harvested by three general methods, or a combination of the three. The entire young plant may be cut off at ground level just as are mustard greens, the entire mature plant may be cut off at the ground, or the bottom leaves may be stripped off the plant periodically leaving the bud to grow and produce more leaves. The last method is most popular with home gardeners since it entails making only one planting, and spring-planted collards may be continuously harvested throughout the summer and into winter.

When the entire small or immature plants are to be harvested, successive plantings may be made at 2- to 3-week intervals. Immature plants may be harvested about 40 days and mature plants about 75 days after planting.

Collards tend to improve in flavor as the weather becomes cooler in the fall. Many gardeners do not harvest the fall crop until after the first frost. Leaves remain tender and edible for several weeks after they reach maturity or full size.

Yields vary from $\frac{1}{3}$ to $1\frac{1}{2}$ pounds per foot of row, depending on harvesting methods used.

KALE (*Brassica oleracea* var. *acephala*)—is a native of Europe and recorded use dates back to 200 B.C. Like collards, it is a member of the cabbage family and is grown for its succulent leaves and stems.

A hardy vegetable, kale can be overwintered in latitudes as far north as southern Pennsylvania and in areas having similar winter conditions. It is also quite heat-resistant and may grow in the summer, but its greatest value is as a cool weather green. No other vegetable is so well adapted to fall sowing in areas having winters of moderate severity.

One serving of cooked kale has 21 calories. It provides an average adult with all his daily requirements of Vitamin A and Vitamin C as well as 13% of his daily calcium requirement.

Temperature, soil, fertility, and moisture conditions for kale are the same as previously suggested for collards.

Vates, Dwarf Siberian, and Dwarf Blue Scotch are good standard varieties. Seed may be planted in the spring 4 to 6 weeks before the last killing frost, and in the fall 6 to 8 weeks before the first killing frost. There are about 10,000 seeds per ounce.

Rows may be 18 to 24 inches apart.



Seed is planted in the row an inch apart and a half inch deep. Seedlings will emerge in 3 to 5 days. Plants may be left as thick as seeded or gradually thinned until they are 8 to 14 inches apart. The plants pulled out in thinning may be used as greens.

Pests and pest control for kale are similar to those suggested previously for collards.

Kale may be harvested in one of two ways. The entire young plants may be cut off at ground level, about 40 days after seeding. This process is used when the plants are left unthinned after seeding.

When plants are spaced 8 to 14 inches apart, the lower leaves are stripped off periodically while the bud and a rosette of leaves are left to continue growth for future harvests. This second harvest method requires about 50 to 60 days from seeding to first harvest. Leaves should be harvested before they become old, tough, and woody.

A foot of row will produce about a half pound of kale greens.

MUSTARD (*Brassica juncea* var. *crispifolia*)—also known as "mustard greens," is a short season crop grown for its tender leaves and stems. This crop had its origin in China and Asia. A different species, black mustard, is grown for its dark seed which is used in making the condiment known as table mustard.

One serving of cooked mustard greens has 16 calories and provides 91% of the Vitamin A, 74% of the Vitamin C, and 12% of the calcium in the daily requirements of an average adult.

Soil, fertility, and moisture requirements for mustard greens are similar to those previously suggested for collards. This crop will not withstand the extremes in temperature that kale

Top, collards are a nutritious crop found in many gardens of Southeastern U.S. Left, collard plant ready for harvest.

and collards will. It also bolts (goes to seed) much more rapidly, particularly in spring.

Optimum monthly average temperature for plant growth is 60° to 65° F with a monthly minimum average of 45° and a monthly maximum average of 70° to 75°. Optimum soil temperature range for seed germination is 60° to 105° with a minimum of 40°, an optimum of 85°, and a maximum of 105°.

Reliable mustard varieties include Southern Giant Curled, Tendergreen, Florida Broadleaf, and Green Wave. One-fourth ounce of seed will plant 100 feet of row. There are about 15,000 seeds per ounce.

Soil preparation and fertilization are similar to those previously suggested for collards. Seeds are planted directly in the row about 4 to 6 weeks before the last frost in the spring and about 6 to 8 weeks before the first frost in the fall. Additional successive plantings may be made at two-week intervals. Rows may be 15 to 30 inches apart. Seeds are planted in the row, an inch apart and ¼ inch deep. Seedlings will emerge in 3 to 5 days.

Plants may be left unthinned or thinned to 4 to 6 inches apart. The plants thinned out may be used for greens.

Pests and pest control are the same as described for collards.

The young tender leaves are harvested any time after they reach 6 to 8 inches in height and before they become tough and woody. Harvest begins about 35 to 40 days after seeding. Normally the entire plant is cut off slightly above the ground. In the Deep South, mustard greens may be carried over into winter and harvested by stripping the lower leaves similar to collards and kale.

One foot of row will yield about a half pound of mustard greens.

SPINACH (*Spinacia oleracea* var. *inermis*)—was cultivated by the Persians over 2,000 years ago. The edible

Below, rows of spinach in a garden. Bottom, Long Standing Bloomsdale spinach.

portion of the plant is the compact rosette of leaves before the central bud begins to elongate to form a seedstalk.

This is a hardy cool weather crop. In most of the United States it is grown as an early spring and a late fall crop. In some areas having mild summer temperatures, spinach is grown continuously from early spring to late fall. In portions of the South it may be planted in the fall and harvested during the winter and early spring.



A serving of cooked spinach has 20 calories. It provides an average adult with 100% of the Vitamin A, 56% of the Vitamin C, and 28% of the iron indicated in the minimum daily requirement.

Spinach will grow on almost any fertile soil that is well drained and has a good supply of organic matter. Avoid poorly drained soils or those that cake or crust easily. The soil pH range is 6.0 to 6.8. Spinach grows poorly on soils with a pH below 6.0.

Optimum monthly average temperature for plant growth is 60° to 65° F. Optimum monthly minimum average is 40° and optimum maximum average is 75°. Optimum soil temperature for seed germination is 70° with a minimum of 35° and a maximum of 85°.

Spinach is shallow rooted; provide adequate soil moisture for rapid and continuous growth.

Among the leading spinach varieties for fall production are Hybrid #7, Virginia Savoy, Resistoflay, Viroflay, and Chesapeake. Among the better spring varieties are Long Standing Bloomsdale and America. A half ounce of seed will plant 100 feet of row. There are approximately 2,800 seeds per ounce.

Spinach is normally planted about 4 to 6 weeks before the last frost in the spring and again 6 to 8 weeks before the first frost in fall. Two to three successive plantings may be made at 2- to 3- week intervals.

Rows are usually 14 to 30 inches apart, depending on cultivation equipment to be used. Before planting, broadcast about 3 to 4 pints of fertilizer, such as 10-10-10, per 50 feet of row and mix thoroughly with the soil. Plant seeds in the row a half inch deep and an inch apart. It takes spinach seedlings about 5 to 8 days to emerge. Thin plants to a 3- to 4-inch spacing before they become crowded in the row.

Keep weeds out by hoeing before they get a good start. Use varieties resistant to mildew and yellows. Observe plants closely for aphids, leaf miners, or cabbage worms. Use similar control measures as suggested under chard.

Spinach may be harvested from the time the plants have 5 to 6 leaves until just before seedstalks develop. This period is usually 35 to 45 days after seeding. Harvest by cutting the entire plant off, just above ground level, with a sharp knife.

One foot of row will yield a third to a half pound of spinach greens.

NEW ZEALAND SPINACH (*Tetragonia expansa*)—is a native of New Zealand, Japan, Australia, and South America. It was introduced to England in 1771 and is presently grown to a very limited extent in the United States. Not a true spinach, it does resemble spinach somewhat in appearance and is used similarly.

The plant is large, growing to a height of two or more feet in a spreading and branching habit of growth, and has thick succulent leaves. It is a warm season crop and an excellent source of fresh greens throughout the summer.

One serving of cooked New Zealand spinach has 11 calories and provides 72% of the Vitamin A, 27% of the Vitamin C, and 10% of the iron in an average adult's minimum daily requirement.

New Zealand spinach thrives in a well drained loamy soil, high in organic matter and fertility. A soil pH of 6.0 to 6.8 is desirable. Fertility and soil moisture needs are similar to those for spinach. The plant grows best with a monthly average temperature of 60° to 75° F, a monthly minimum average of 50° and a monthly maximum average of 95°. Optimum soil temperature range for seed germination is 70° to 95° with a minimum of 60° and a maximum of 100°.

Since this is a warm season crop,



New Zealand spinach.

delay planting until danger of spring frosts is over and the soil has warmed.

Space rows 3 to 4 feet apart. Before planting, broadcast 3 pints of fertilizer, such as 10-10-10, per 50 feet of row and mix thoroughly with the soil.

Seed is large and irregularly shaped with a count of about 350 per ounce. Plant seeds in the row 1 inch deep and 4 to 6 inches apart. To insure prompt germination, soak seed in warm water for 2 to 3 hours before planting.

Seedlings normally emerge in 7 to 12 days. Plants may be gradually thinned out until they are spaced 12 to 18 inches apart in the row.

Control weeds by hoeing or with a mulch. There are no insects or diseases of consequence.

About 4 to 6 weeks after planting, sidedress with either one pint of fertilizer (such as 10-10-10) or $\frac{1}{2}$ cup of nitrate of soda per 50 feet of row.

Harvest may begin about 70 days after seeding. Successive harvests of the tips are made from a single planting. At each harvest about 3 inches of the tips of the branches are cut or pinched off. This results in more branching and more new succulent growth. The thick leaves as well as the tender stems are cooked.

Harvesting continues throughout the summer and until the first fall frost. Take care not to remove too large a portion of the plant at one time. During early harvests, a half to two-thirds of the branch tips may be taken at one harvest. As the plant continues to branch a greater portion of the tips may be harvested at one time.

One foot of row will yield about three-fourths pound of greens for the entire season.

Summary: Greens are easy to grow and quite nutritious. For maximum yields and quality, growth should be rapid and continuous. To insure such growth, provide for a well drained soil, add organic matter if needed to keep the soil loamy and retentive of moisture and nutrients, maintain an adequate fertilizer level, provide for adequate moisture, plant during the proper season, control pests, and harvest at peak of quality.